

MAY 21 2007

REMARKS

Applicants would like to thank the Examiner for careful consideration of this application and continued patience in its prosecution. Claims 1, 2, 4, 7 and 51-21 have been cancelled. New Claims 23-32 have been added. These claims depend on independent Claim 8 and incorporate the subject matter of the deleted claims. Support for this amendment can be found in the Application as originally filed, specifically, on page 11, lines 8-10 and throughout the Examples. Applicants submit no new matter has been added.

Rejections under 35 USC 112

Claims 1, 2, 4-10, 15, 20 and 21 stand rejected under 35 U.S.C. § 112, first and second paragraph. Applicants apologize for the error in the previously submitted claims and the confusion created there under. Applicants have cancelled the rejected claims thereby rendering the Examiner's rejection moot.

Rejections under 35 USC 103

Claims 1, 2, 4-10, 15, 20 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,127,488 to Obrecht, et al. (herein after "Obrecht") or its foreign equivalent German Patent No. DE 19707487 (hereinafter "DE '487"), each in view of U.S. Patent No. 5,232,531 to Dammann, et al. (hereinafter "Dammann") or JP 57-212239 (hereinafter "JP '239") or JP 5-17630 (hereinafter "JP '630").

The Examiner alleges that Obrecht teaches rubber mixtures comprising double bond containing rubber and crosslinked rubber particles having the Applicant's claimed properties and that these mixtures are useful for producing vulcanisates and molded articles. The Examiner concedes that Obrecht is silent as to the use of polyisocyanate as a crosslinking agent and contends that the secondary references teach that the use of polyisocyanates improves the physical properties of the rubber mixtures and was well known at the time of the invention. Applicants respectfully disagree.

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Rovka, 490 F.2d 981, 180 USPQ 580 (Fed. Cir. 1974)". Applicants also respectfully submit that "in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claims limitations. The teachings or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure." See MPEP § 2142, citing In re Vaeck, 947 F.2d 488, 20 USPQ 2d. 1438 (Fed. Cir. 1991).

First and foremost, Obrecht or DE '487 fails to teach or suggest the use of a polyisocyanate crosslinking agent, and Applicants submit that Dammann, JP '239", or JP '630 fail to provide motivation to modify the process of Obrecht or DE '487 to arrive at the Applicants claimed invention. In particular, the current claimed invention is directed to vulcanized rubbers, as recited in amended independent Claim 8 that may be used to make "cable sheaths, hoses, drive belts, conveyor belts, roller coverings, tire components, shoe soles, gaskets, damping elements, and membranes" as recited in Claim 10 and page 11, lines 10-12 of the Application as originally filed. One of ordinary skill in the art would not look to a method for making an adhesive as taught in Dammann, JP '239", or JP '630 to prepare a vulcanized rubber mixture because the improved physical property, namely adherence, is not an advantageous characteristic for a polymer used to make "cable sheaths, hoses, drive belts, conveyor belts, roller coverings, tire components, shoe soles, gaskets, damping elements, and membranes". In fact, a polymer that displays adherence properties would not be useful for the Applicants claimed purpose because it is important that these articles not adhere to their surroundings. Therefore, this property would have a deleterious effect on the final product.

As can be seen from the examples in the present application, the mechanical properties of vulcanates prepared from rubber mixtures comprising in addition the components A and B multifunctional isocyanates as component C are improved (as indicated by the product of modulus 300 and elongation at break, see example 6, mixture series C, page 21 to 23, especially page 23, lines 5 to 8 and example 7, mixture series D, page 23, line 10 to page 26, line 7, see especially the result on page 26, lines 4 to 7.

The effect of improving the mechanical properties of vulcanates comprising uncrosslinked, double-bond-containing rubbers (A) and cross-linked rubber particles (B) by Mo-5842

adding multifunctional isocyanates (C) was not obvious in view of Obrecht wherein no multifunctional isocyanates are employed.

Moreover, one of ordinary skill in the art would not expect to prepare a rubber mixture prepared from vulcanized rubbers as recited in amended independent Claim 8 that does not have adhesive qualities. Dammann, JP '239", and JP '630 clearly teach that the use of polyisocyanate cross-linking agents result in polymers with adhesive qualities. Consequently, the vulcanized rubber mixtures of amended independent Claim 8 show surprising or unexpected qualities since they do not have these adhesive characteristics.

Dammann (US '531) and JP 5-17 630 do not disclose vulcanates but adhesives (Dammann, column 1, line 6 and JP 5-17 630 "use/advantage"). It is not desired that the vulcanates according to the present invention have adhesive properties. Therefore, the vulcanates according to the present invention do neither adhere to the compounding aggregates (mills and internal mixes) nor to the vulcanization moulds. The rubber mixtures according to Dammann as well as according to JP 5-17 630 do not comprise a vulcanizing agent. According to Dammann an adhesive is disclosed comprising a butyl rubber cross-linked after polymerization, a halogenated butyl rubber, a hydrocarbon tackifying resin, and a diamine reacted with an isocyanate (see for example claim 1, column 7, lines 1 to 6). The butyl rubber present in the mixtures according to Dammann is cross-linked. However, the rubber mixture according to Dammann is not cross-linked, because it is used as an adhesive. Therefore, also Dammann does not disclose vulcanates according to the present application, but adhesives, which are not vulcanized.

According to JP 57-21 22 39 compositions are disclosed comprising a rubber component composed of a solid rubber and of a liquid diene rubber having functional groups, a masked polyisocyanate and a novolac-type phenolic resin and/or a novolac-type modified phenolic resin.

JP 57-21 22 39 does not disclose the claimed vulcanate. The mixtures according to JP 57-21 22 39 do not comprise any vulcanizing agent. Further, according to the abstract of JP 57-21 22 39 a solid rubber is employed. However, it is not clear, whether or not said solid rubber is composed of cross-linked rubber particles as claimed in the present invention (see component B).

Applicants further submit, due to concerns of compound safety, reduction of compound shelf life and premature vulcanization, it is previously not known or suggested in the prior art to prepare a vulcanate rubber as claimed with an isocyanate as isocyanates are known in the art to react quickly with compounds containing functional groups.

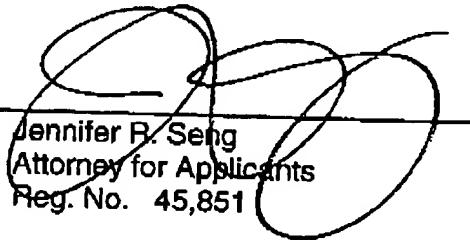
Therefore, the skilled artisan would not expect to prepare a vulcanized rubber mixture useful for the production of "cable sheaths, hoses, drive belts, conveyor belts, roller coverings, tire components, shoe soles, gaskets, damping elements, and membranes" by combining the teachings of Obrecht or DE '487 with either Dammann, JP '239", or JP '630 because the vulcanized rubber mixture would be expected to have adhesive qualities.

Accordingly, the combination of Obrecht or DE '487 in view of either Dammann, JP '239", or JP '630 fails to render the current claimed invention obvious because there would be no motivation to combine the teachings of these reference to prepare a vulcanized rubber mixture useful for the claimed purpose, nor would the skilled artisan expect to prepare a vulcanized rubber mixture with properties suitable for the claimed purpose.

It is believed that the pending claims are now in condition for allowance and notice to such effect is respectfully requested. Should the Examiner have any questions regarding this application, the Examiner is invited to initiate a telephone conference with the undersigned.

Respectfully submitted,

By


Jennifer R. Seng
Attorney for Applicants
Reg. No. 45,851

LANXESS Corporation
Law & Intellectual Property Department
111 RIDC Park West Drive
Pittsburgh, Pennsylvania 15275-1112
(412) 809-2233
FACSIMILE PHONE NUMBER:
(412) 809-1054

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